KOYO Electronic Industries Co., Ltd. DirectLogic Series

Computer Link Driver

Supported version TOP Design Studio V1.0 or higher



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We want to thank our customers who use the Touch Operation Panel.

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Describes how to set up communication for external devices.

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Describes the cable specifications required for connection.

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Refer to this section to check the addresses which can communicate with an external device.



1. System configuration

The system configuration of TOP and "KOYO Electronic Industries Co., Ltd. – DirectLogic Series Computer Link" is as follows.

Series	CPU	Link I/F	Communication method	System setting	Cable
	D2-240	communication port 2 on CPU	RS-232C	3. TOP communication setting 4.1. External device setting 1	5.1. Cable table 1
DL-205	D2–250–1	communication port 2 on CPU	RS-232C	3. TOP communication setting 4.1. External device setting 1	5.2. Cable table 2
	D2–260	communication port 2 on CPU communication RS-422 (4 wire)		3. TOP communication setting 4.1. External device setting 1	5.3. Cable table 3
			RS-232C	3. TOP communication setting	
	D4-403	D4–DCM	RS–422 (4 wire)	4.2. External device setting 2	5.4 Cable table 4
			RS-232C	3. TOP communication setting	
	54.440	D4–DCM	RS–422 (4 wire)	4.2. External device setting 2	5.4 Cable table 4
	D4-440	communication	RS-232C	3. TOP communication setting	
DL-405		port on CPU	RS–422 (4 wire)	4.1. External device setting 1	5.5 Cable table 5
			RS-232C	3. TOP communication	
	D4 450	D4–DCM	RS–422 (4 wire)	4.2. External device setting 2	5.4 Cable table 4
	D4-450	communication	RS-232C	3. TOP communication	
		port on CPU	RS-422 (4 wire)	4.1. External device setting 1	5.6 Cable table 6
				3. TOP communication	
DL-305 D3-330		D3–DCM	RS–422(4 wire)	4.2. External device setting 2	5.7 Cable table 7

■ Connection configuration

• 1:1 (one TOP and one external device) connection – configuration which is possible in RS232C/422 communication.





• 1:N (one TOP and multiple external devices) connection - configuration which is possible in RS422 communication.





2. External device selection

■ Select a TOP model and a port, and then select an external device.

DI C soloct [Ci	ом11						
PLC Select [C	UMIJ						
Hilter : [All]			\sim		Search :	Model OVe	ndor
Vendor		Mode			0	0	
YASKAWA Electric Corp	oration	^ 🔗	DirectLogi	: Series			
YOKOGAWA Electric Co	rporation						
Schneider Electric Indus	stries						
KDT Systems							
RS Automation							
HITACHI IES							
ATEK Automation Corp	poration						
DELTA Electronics							
KOYO Electronic Indust	ries						
VIGOR Electric Corpora	tion						
COMFILE TECHNOLOGY	/ Inc.						
OST ROBOT							
3ACnet							
SMECAPION		~					
lect Device				• Duck	- Next		Cancel
lect Device PLC Setting[Direc	ctLogic Ser	ies]			- Next		Cancel
elect Device PLC Setting[Direct Alias Name	c tLogic Ser : PLC1	ies]			I Next		Cancel
elect Device PLC Setting[Direct Alias Name Interface	ctLogic Ser : PLC1 : Computer Li	ies] nk			I WEXT		Cancel
elect Device PLC Setting[Direct Alias Name Interface Protocol	CtLogic Ser PLC1 Computer Li Computer Li	ies] nk nk			- Next	Comm Mar	ual
elect Device PLC Setting[Direct Alias Name Interface Protocol String Save Mode	CtLogic Ser PLC1 Computer Li Computer Li First LH HL	ies] nk nk Ct	↓ ↓ ange		- Next	Comm Mar	ual
ect Device PLC Setting[Direct Alias Name Interface Protocol String Save Mode Use Redundance Derate Condition : a	CtLogic Ser : PLC1 : Computer Li : Computer Li : First LH HL CY	ies] nk nk Cr	↓ ↓ ange		- Next	Comm Man	ual
elect Device PLC Setting[Direct Alas Name Interface Protocol String Save Mode Use Redundan Operate Condition : Change Condition :	CtLogic Ser PLC1 Computer Li First LH HL CY TimeOut	nk Cr	ange			Comm Man	ual
elect Device PLC Setting[Direc Alias Name Interface Protocol String Save Mode Use Redundand Operate Condition : Change Condition :	ctLogic Ser : [PLC1 : Computer Li : First LH HL CY ND TimeOut Condition	ies] nk nk Cr	ange (Second)			Comm Man	ual
elect Device PLC Setting[Direct Alias Name Interface Protocol String Save Mode Use Redundam Operate Condition : Change Condition : Primary Option	CtLogic Ser : PLC1 : Computer Li : Computer Li : First LH HL CY ND ~ 1 TimeOut 1 Condition	nk nk Cr	ange (Second)			Comm Man	ual
elect Device PLC Setting[Direct Alas Name Interface Protocol String Save Mode Use Redundant Operate Condition : Change Condition : Primary Option Timeout	tLogic Ser PLC1 Computer Li Computer Li First LH HL Cy TimeOut Condition 300	ies] nk nk 5 5 msec	ange (Second)			Comm Man	ual
elect Device PLC Setting[Direct Alias Name Interface Protocol String Save Mode Use Redundan Operate Condition : Primary Option Timeout Send Wait	ttLogic Ser : [PLC1 : Computer Li : First LH HL CY ND Condition 300 0 2 0 2 2 2 2 2 2 2 2 2 2 2 2 2	ies]	ange (Second)			Comm Mar	ual
elect Device PLC Setting[Direct Alias Name Interface Protocol String Save Mode Use Redundan Operate Condition : Change Condition : Primary Option Timeout Send Wait Retry	ctLogic Series : PLC1 <td: computer="" li<="" td=""> : Computer Li : First LH HL Cy ND : Condition : Gondition : 300 : 5</td:>	ies] nk nk Cr 5 msec msec msec	ange (Second)			Comm Man	ual
elect Device PLC Setting[Direct Alias Name Interface Protocol String Save Mode Use Redundand Operate Condition : Primary Option Timeout Send Wait Retry Station Num	Series : PLC1 <td: computer="" li<="" td=""> <td: computer="" li<="" td=""> <td: first="" hl<="" lh="" td=""> CY ND * Onderson 300 0 5 0 5 0</td:></td:></td:>	ies] nk nk Cr 5 msec msec msec	ange (Second)			Comm Man	ual
elect Device PLC Setting[Direct Alas Name Interface Protocol String Save Mode Use Redundam Use Redundam Operate Condition : Primary Option Timeout Send Wait Retry Station Num Series selection	Status Sector : PLC1 : Computer Li : Computer Li : First LH HL : First LH HL • 1 TimeOut : Condition 1 TimeOut : Condition 5 : :: :: 5 : :: :: 0 : :: :: Duration :	ies]	ange			Comm Man	ual
elect Device PLC Setting[Direct Alas Name Interface Protocol String Save Mode Use Redundant Operate Condition : Primary Option Timeout Send Wait Retry Station Num Series selection	Status Series Image: Series Image: Series Image: Serie	ies]	ange (Second)			Comm Man Edit	ual
elect Device PLC Setting[Direct Alias Name Interface Protocol String Save Mode Use Redundan Operate Condition : Primary Option Timeout Send Wait Retry Station Num Series selection	ctLogic Series : [PLC1 <td: computer="" li<="" td=""> : Computer Li : First LH HL CY ND : Condition : 300 : 300 : 5 : 6 : 5 : 6 : 5 : 6</td:>	ies] nk nk Cr 5 msec msec msec v	↓ v v (Second)			Comm Mar	ual
elect Device PLC Setting[Direct Alas Name Interface Protocol String Save Mode Use Redundan Operate Condition : Primary Option Timeout Send Wait Retry Station Num Series selection	Image: Series	ies] nk Cr 5 msec msec msec v	↓ (Second)			Comm Mar	ual

Settings		Contents			
ТОР	Model	Check the TOP display and process to select the touch model.			
External device	Vendor	Select the vendor of the external device to be connected to TOP. Select "KOYO Electronic Industries".			
	PLC	Select an external device to connect to TOP.			
		Model	Interface	Protocol	
		DirectLogic Series Computer Link Computer Link			
		Supported Protocol			
		DirectNet			
		Please check the system configuration in Chapter 1 to see if the external device you want to			
		connect is a model whose syst	em can be configured.		



3. TOP communication setting

The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

3.1 Communication setting in TOP Design Studio

(1) Communication interface setting

- [Project > Project properties > TOP settings] → [Project option > Check "Use HMI settings" > Edit > Serial]
 - Set the TOP communication interface in TOP Design Studio.



Items	ТОР	External device	Remarks
Signal Level (port)	RS-232C		
	RS-422		
Baud Rate	19200		
Data Bit	8		
Stop Bit	1		
Parity Bit	None.		

* The above settings are examples recommended by the company.

Items	Description
Signal Level	Select the serial communication method between the TOP and an external device.
Baud Rate	Select the serial communication speed between the TOP and an external device.
Data Bit	Select the serial communication data bit between the TOP and an external device.
Stop Bit	Select the serial communication stop bit between the TOP and an external device.
Parity Bit	Select the serial communication parity bit check method between the TOP and an external device.



 \times

(2) Communication option setting

- [Project > Project properties > PLC settings > COM > "PLC1 : DirectLogic Series"]
 - Set the options of the communication driver of KOYO Electronic Industries DirectLogic Series Computer Link in TOP Design Studio.

Project Option					
Change HMI[H]	Add I	PLC [<u>A]</u>	Change PL	.c.(_] 🔀	Delete PLC[D]
TOP Setting		PLC	Setting[Direct	Logic Serie	es]
 Option Module Setting 			Alias Name :	PLC1	
FieldBus (0)			Interface :	Computer Lin	k ~
 Weice Setting 		Protocol :	Computer Lin	k 🗸 🗸	

SYS : RD1520X	5-					
Option Module Setting	Alias Name :	PLC1				
	Interface ·	Computer Link				
	inchace.					
✓ · · · · · · · · · · · · · · · · · · ·	Protocol :	Computer Link 🗸			Co	mm Manual
Y COM1 (1)	String Save Mode :	First LH HL Change				
PLC1 : DirectLogic Series	builing burer loac i					
		-				
		/				
	Operate Condition : AN	D ~				
	Change Condition :	TimeOut 5 📩 (Sec	ond)			
USBDevice (0)	_	•		F-04		
		Condition		Edit		
	Primary Option					
	Timeout	300 🚔 msec				
	Send Wait	n msec				
1	Retry	5				
	Station Num	0				
	Series selection	DL 205				
		DL-203 V				
< >>						
					Apply	Close

Items	Settings	Remarks
Interface	Select "Computer Link".	Refer to "2. External
Protocol	Select "Computer Link".	device selection".
TimeOut (ms)	Set the time for the TOP to wait for a response from an external device.	
SendWait (ms)	Set the waiting time between TOP's receiving a response from an external device	
	and sending the next command request.	
Station Num	Enter the prefix of an external device.	
Series selection	Select the series of the external device.	



3.2. Communication setting in TOP

* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

■ Touch the top of the TOP screen and drag it down. Touch "EXIT" in the pop-up window to go to the main screen.



(1) Communication interface setting

■ [Main screen > Control panel > Serial]

	ō		Control Panel		×	
	🔯 System	Dev i	- Sei	rial ×		
Hun VNC Viewer Screen Shot	PLC S PLC S Ethernet Diagnostic	Security Date Security Date Serial	Serial Port: Signal Level RS-232C O RS-4 Baud Rate: Data Bit: Stop Bit: Parity Bit: Flow: Auto Search	COM1	Se	
						2
TOPRX - TOPRX080	IOS			A 202	1-09-01	11:
Items		TO	p	External devi	ice	Re
Signal Level (port)			RS-232C			
			RS-422			
Baud Rate			19200			
Data Bit			8			
Stop Bit			1			

Parity Bit

* The above settings are setting <u>examples</u> recommended by the company.

Items	Description
Signal Level	Select the serial communication method between the TOP and an external device.
Baud Rate	Select the serial communication speed between the TOP and an external device.
Data Bit	Select the serial communication data bit between the TOP and an external device.
Stop Bit	Select the serial communication stop bit between the TOP and an external device.
Parity Bit	Select the serial communication parity bit check method between the TOP and an external device.

None.

(2) Communication option setting

External device connection manual for TOP Design Studio



	ŏ	1001	PLC	×	
	🔞 System	Driver(COM1)	PLC1(DirectLogic Series) 🔻		
Run		Interface	Computer Link 🔹		
		Protocol	Computer Link 🔻		
MNG		Timeout	300 🚔 msec		
	PLC Secu	Sond Whit			
YNC	-	Senu mart			
Viewer	[iiii] 🔤	Retry	5		
	Ethernet Sei	Station N	0		
	Ethornot	Series se	DL-20 -		
Screen	infl ^{w/}				
	Diagnostic F				
	Mani				
		r			
	[System]	Diagnostic	A	pply Cancel	
			La		
TOPRX - TOPRX0800	S		A 2021-09	01 11:12:53 AM	
Items	Settings			Remarks	
Interface	Select "Computer	Link".		Refer to "2. External	
Protocol	Select "Computer	Select "Computer Link".			
TimeOut (ms)	Set the time for t	he TOP to wait for a	response from an external device.		
SendWait (ms)	Set the waiting ti	me between TOP's re	ceiving a response from an external device		
	and sending the next command request.				
Station Num	Enter the prefix of an external device.				
Series selection	Select the series of the external device.				



3.3 Communication diagnostics

■ Check the interface setting status between the TOP and an external device.

- Touch the top of the TOP screen and drag it down. Touch "EXIT" in the pop-up window to go to the main screen.
- Check if the COM port settings you want to use in [Control Panel > Serial] are the same as those of the external device.
- Diagnosis of whether the port communication is normal or not
- Touch "Communication diagnostics" in [Control Panel > PLC].
- The Diagnostics dialog box pops up on the screen and determines the diagnostic status.

ОК	Communication setting normal
Time Out Error	Communication setting abnormal
	- Check the cable, TOP, and external device setting status. (Reference: Communication diagnostics sheet)

■ Communication diagnostics sheet

- If there is a problem with the communication connection with an external terminal, please check the settings in the sheet below.

Items	Conte	ents	Ch	eck	Remarks
System	How to connect the sy	stem	OK	NG	1 System configuration
configuration	Connection cable name	e	ОК	NG	<u>1. system configuration</u>
ТОР	Version information		OK	NG	
	Port in use		OK	NG	
	Driver name		OK	NG	
	Other detailed settings	i	OK	NG	
	Relative prefix	Project setting	OK	NG	
		Communication	OK	NC	2. External device selection
		diagnostics	ŬK	NG	3. Communication setting
	Serial Parameter	Transmission	OK	NC	
		Speed	Ŭĸ	NG	
		Data Bit	ОК	NG	
		Stop Bit	OK	NG	
		Parity Bit	OK	NG	
External device	CPU name	OK	NG		
	Communication port n	ОК	NG		
	Protocol (mode)	OK	NG		
	Setup Prefix	OK	NG		
	Other detailed settings	Other detailed settings			4 External device setting
	Serial Parameter	Transmission	OK	NC	4. External device setting
		Speed	ÜK	NG	
		Data Bit	ОК	NG	
		Stop Bit	OK	NG	
		Parity Bit	OK	NG	
	Check address range				6. Supported addresses
			OK	NG	(For details, please refer to the PLC
				vendor's manual.)	



4.1 External device setting 1 (Port on CPU Unit)

Use "DirectLogic Series" Ladder Software "DirectSOFT6 Programming" to set as follows. For more detailed setting method than that described in this example, refer to the PLC user manual.

Step. 1 Create a new project.

New Project		×
New Project Name	Browse	ОК
	_	Cancel
Eamly: Direct Logic 0/1/2/4/350 Direct Logic 3055 GE Series 1 Koyo Kostac S-Series Simatic TI 305 Simatic TI 305 Simatic TI 405	Lype: DL 05 DL 06 DL 130 DL 230 DL 240 DL 250(-1) DL 250(-1) DL 250 DL 350 DL 440 ▼	<u>H</u> elp

Step. 2 Execute [PLC > Connect] in the menu to set the communication method between PC and PLC and to connect to PLC.

DirectSOFT 6 Programming - UNTITLE) - [Ladder View]	Select Link	
File Edit Search View Tools PL	C Debug Window Help		
	Connect	_ Links	
Baad Dick Write Dick New	Disconnect	M2L: TOP-R	<u>S</u> ele
ead Disk write Disk New O	Link Setup		
	Offline Setup		Cano
Read PLC Write PLC Status 🕻 🗭	Memory Map		
Ref View 🕺	Tools		Add.
▦▥◈▤५◀▸◈▫	PLC Modes Ctrl+Shift+R		
Element Rung XV	Configure I/O		Edit
NONE	Password		<u>_</u>
	Diagnostics •		
	Setup •		
24	Clear PLC Memory		
1	Copy config data from PLC to Disk	🔽 Link Enabled	<u>H</u> elp
3	Copy config data from Disk to PLC		

Step. 3 Execute [PLC > Setup > Setup Sec. Comm Port...] in the menu to set the serial communication parameters of the external device.





Setup Communication Ports	×
Port: Port 2	▼ Close
Protocol:	Base Timeout:
	800 ms Help
Non-Seq(AS)	CII) 3 Characters
Time-out: Base Timeout ×	1 💌
RTS on delay time: 0 ms	•
RTS off delay time: 0 ms	-
Station Number: 1 🚔	
Baud rate: 19200	Echo Suppression Echo Suppression BS_4222495 (4.wire)
Stop bits: 1	RS-232C (2-wire)
Parity: None	K5-485 (2-wire)
Format: Hex	
Port 2: 15 Pin	

Items	Settings	Remarks
Port	Port 2	
Protocol	DirectNET	Required settings
Station Number	1	
Baud rate	19200	
Stop bit	1	
Parity bit	None	
Format	Hex	Required settings

Step. 4 Send the settings to PLC.



4.2 External device setting 2 (D4-DCM)

Use the Dip Switch of "D4-DCM" communication module to set the communication as follows. After completing the setting, reboot the power.

For more detailed setting method than that described in this example, refer to the PLC user manual.

1. Rotary Switch (Module front, Station No. Setting)

Rotary Swtich	Settings	Settings	Remarks
Station No. x10	0		
Station No. x1	1	Station No. : I	

2. DIP Switch SW4 setting (Back of the module , Serial Comm. Settings)

	E		Cattlena	Cautana	Description
DIP Switch	Functions		Settings	Settings	Remarks
1			On		
2	Baud Rate *Note 1)		On	Baud rate transmission speed: 19,200bps	
3			On		
4	Parity		Off	None Parity (On : Odd Parity)	
5	Self Test		Off	Self-diagnosis mode: OFF	
6			Off		
7	Response dela	iy time	Off	Response delay time: 0 ms	
8			Off		
*Note 1)				_	
Baud	SW 1	SW 2	SW 3		
4800	On	Off	On	-	
	o."	-			

4800	On	Off	On
9600	Off	On	On
19200	On	On	On
38400	Off	Off	Off

3. DIP Switch SW5 setting (Back of the module, Protocol Settings)

DIP Switch	Functions	Settings	Settings	Remarks	
1	Droto col coloction (Note 1)	Off	DirectNet Clave	Fired	
2	Protocol selection *Note I)	Off	Directivet slave	Fixed	
3	Communication Timeout	Off	Timeout enable/disable setting: Normal operation mode		
4	ASCII / HEX Mode	Off	Transmission mode: HEX mode	Fixed	
+NI-+- 1)					

^INOTE I)		
Protocol	SW 1	SW 2
DirectNet Slave	Off	Off
DirectNet Master	Off	On
DirectNet Peer	On	Off
Modbus RTU	On	On



5. Cable table

This chapter introduces a cable diagram for normal communication between the TOP and the corresponding device. (The cable diagrams described in this chapter may differ from the recommendations of "KOYO Electronic Industries Co., Ltd.".)

5.1 Cable table 1 (D2-240 - Port on CPU Unit)



*Note 1) The pin arrangement is as seen from the connecting side of the cable connection connector.

5.2 Cable table 2 (D2-250-1 - Port on CPU Unit)

■ RS-232C (1:1 connection)

TOP				PLC		
Pin	Signal	Pin	Cable connection	Pin	Signal	Pin
arrangement*Note 1)	name	number		number	name	arrangement*Note 1)
	CD	1		1	5VDC	6
1 5	RD	2		2	TXD	1 • • • 11
(° °)	SD	3		3	RXD	
	DTR	4	•	4	RTS	5 • • 15
Based on	SG	5		5	CTS	10
communication	DSR	6		6		Based on
cable connector	RTS	7	•	7	SG	communication
front,	CTS	8		8		cable connector
D-SUB 9 Pin male		9		9		front,
(male, convex)						D-SUB 15 Pin male
						(male, convex)



5.3 Cable table 3 (D2-260 - Port on CPU Unit)

ТОР				PLC		
Pin	Signal	Pin	Cable connection	Pin	Signal	Pin
arrangement*Note 1)	name	number		number	name	arrangement*Note 1)
	CD	1		1	5VDC	6
1 5	RD	2		2	TXD	1
	SD	3		3	RXD	
6 9	DTR	4	•	4	RTS	5 15
Based on	SG	5		5	CTS	10
communication	DSR	6		6		Based on
cable connector	RTS	7	•	7	SG	communication
front,	CTS	8		8		cable connector
D-SUB 9 Pin male		9		9		front,
(male, convex)						D-SUB 15 Pin male
						(male, convex)

■ RS-232C (1:1 connection)

*Note 1) The pin arrangement is as seen from the connecting side of the cable connection connector.

■ **RS-422** (1:1 connection)

TOP				PLC			
Pin	Signal	Pin		Cable connection	Pin	Signal	Pin
arrangement*Note 1)	name	number			number	name	arrangement*Note 1)
	RDA	1	- • '	•	6	RXD-	6
1 5		2		•	7	SG	1
		3]		9	TXD+	
6 9	RDB	4			10	TXD-	5 15
Based on	SG	5		<u>↓ </u>	11	RTS+	10
communication	SDA	6		• •-	12	RTS-	Based on
cable connector		7	•		13	RXD+	communication
front,		8		•	14	CTS+	cable connector
D-SUB 9 Pin male		9	-		15		front,
(male, convex)	SDB					CTS-	D-SUB 15 Pin male
							(male, convex)

*Note 1) The pin arrangement is as seen from the connecting side of the cable connection connector.

RS-422 1 : N connection - Refer to 1:1 connection to connect in the following method.

TOP	Cable connection and signal	PLC	Cable connection and signal	PLC
Signal name	direction	Signal name	direction	Signal name
RDA		SDA		SDA
RDB		SDB		SDB
SDA		RDA		RDA
SDB		RDB		RDB
SG		SG	1	SG



■ RS-232C (1:1 connection)

TC	OP				Р	LC
Pin	Signal	Pin	Cable connection	Pin	Signal	Pin
arrangement*Note 1)	name	number		number	name	arrangement*Note 1)
1 5	CD	1		1		1 13
$(\circ \circ)$	RD	2		2	TXD	
	SD	3		3	RXD	14 25
6 9	DTR	4	•	4	RTS	Based on
Based on	SG	5	<u>├</u> ────	5	CTS	communication
communication	DSR	6		6		cable connector
cable connector	RTS	7		7	SG	front,
Tront,	CTS	8				D-SUB 25 Pin
D-SOR A LIU Wale		9		25		female (male,
(male, convex)						convex)

*Note 1) The pin arrangement is as seen from the connecting side of the cable connection connector.

■ **RS-422** (1:1 connection)

TOP				PLC			
Pin	Signal	Pin	Cable connection	Pin	Signal	Pin	
arrangement*Note 1)	name	number		number	name	arrangement*Note 1)	
1 5	RDA	1		14	OUT+	1 13	
$(\circ \circ)$		2	•	15	OUT-		
		3	 	17	IN+	14 25	
6 9	RDB	4		16	IN-	Based on	
Based on	SG	5		7	0V	communication	
communication	SDA	6		10	RTS+	cable connector	
cable connector		7		12	CTS+	front,	
Tront,		8	•	11	RTS-	D-SUB 25 Pin	
D-SOR & Fin male	CDD	9	└────┥	13	CTC	female (male,	
(male, convex)	SDB				CIS-	convex)	

RS-422 1 : N connection - Refer to 1:1 connection to connect in the following me	ethod.
---	--------

TOP	Cable connection and signal	P	LC	Cable connection and signal	Termina	ting PLC
Signal name	direction	Signal	name	direction	Signal	name
RDA		14	OUT+		22	OUT+
RDB		15	OUT-		23	OUT-
SDA		17	IN+		24	IN+
SDB		16	IN-		25	IN-
SG		7	0V		7	0V
	•	10	RTS+	•	10	RTS+
	•	12	CTS+		11	CTS+
	•	11	RTS-	•	12	RTS-
	•	13	CTS-		13	CTS-
		22	OUT+		14	OUT+
		23	OUT-		15	OUT-
		24	IN+		17	IN+
		25	IN-		16	IN-



5.5 Cable table 5 (D4-440 - Port on CPU Unit)

TC	OP				Р	LC
Pin	Signal	Pin	Cable connection	Pin	Signal	Pin
arrangement*Note 1)	name	number		number	name	arrangement*Note 1)
1 5	CD	1		1		1 13
00)	RD	2 ·		2	TXD	
$\left \begin{array}{c} \\ \\ \end{array} \right $	SD	3 .		3	RXD	14 25
6 9	DTR	4	ę	4	RTS	Based on
Based on	SG	5	•	5	CTS	communication
communication	DSR	6		6		cable connector
cable connector	RTS	7		7	SG	front,
Tront,	CTS	8				D-SUB 25 Pin
D-SUB 9 Pin male		9		25		female (male,
(maie, convex)						convex)

■ RS-232C (1:1 connection)

*Note 1) The pin arrangement is as seen from the connecting side of the cable connection connector.

■ **RS-422** (1:1 connection)

ТОР				PLC			
Pin	Signal	Pin	Cable connection	Pin	Signal	Pin	
arrangement*Note 1)	name	number		number	name	arrangement*Note 1)	
1 5	RDA	1		14	TXD+	1 13	
Õ Õ		2	•	16	TXD-		
		3	 	9	RXD+	14 25	
6 9	RDB	4 ·		10	RXD-	Based on	
Based on		5		7	0V	communication	
communication	SDA	6		19	RTS+	cable connector	
cable connector		7		11	CTS+	front,	
Tront,		8	• •	18	RTS-	D-SUB 25 Pin	
D-SOB 9 Pin male	(D.)	9 .	└─────▲	23	CTC	female (male,	
(male, convex)	SDR				CIS-	convex)	

RS-422 1 : N connection - Refer to 1:1 connection to connect in the following me	ethod.
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TOP	Cable connection and signal	P	LC	Cable connection and signal	Termina	ting PLC
Signal name	direction	Signal	name	direction	Signal	name
RDA		14	TXD+	-	14	TXD+
RDB		16	TXD-		16	TXD-
SDA		9	RXD+		9	RXD+
SDB		10	RXD-		10	RXD-
SG		7	0V		7	0V
	•	19	RTS+	•	19	RTS+
	<u> </u>	11	CTS+		11	CTS+
	•	18	RTS-	1	18	RTS-
	•	23	CTS-]	23	CTS-



5.6 Cable table 6 (D4-450 - Port on CPU Unit)

TC	OP				Р	LC
Pin	Signal	Pin	Cable connection	Pin	Signal	Pin
arrangement*Note 1)	name	number		number	name	arrangement*Note 1)
1 5	CD	1		1		1 13
$(\circ \circ)$	RD	2		2	TXD	
\bigcirc	SD	3		3	RXD	14 25
6 9	DTR	4	•	4	RTS	Based on
Based on	SG	5	•	5	CTS	communication
communication	DSR	6		6		cable connector
cable connector	RTS	7		7	SG	front,
Tront,	CTS	8				D-SUB 25 Pin
		9		25		female (male,
(maie, convex)						convex)

■ RS-232C (1:1 connection)

*Note 1) The pin arrangement is as seen from the connecting side of the cable connection connector.

■ **RS-422** (1:1 connection)

TOP				PLC			
Pin	Signal	Pin	Cable connection	Pin	Signal	Pin	
arrangement*Note 1)	name	number		number	name	arrangement*Note 1)	
1 5	RDA	1 .		14	TXD+	1 13	
Õ Õ		2	•	16	TXD-		
		3	 	9	RXD+	14 25	
6 9	RDB	4		10	RXD-	Based on	
Based on		5		7	0V	communication	
communication	SDA	6		19	RTS+	cable connector	
cable connector		7		11	CTS+	front,	
Tront,		8	• • • • • • • • • • • • • • • • • • •	18	RTS-	D-SUB 25 Pin	
D-SOR A LIU Male	(D)	9 .	└─────┥	23	CTC.	female (male,	
(male, convex)	SDB				CIS-	convex)	

■ RS-422 1 : N connection	n - Refer to 1:1	connection to connect in	the following method.
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TOP	Cable connection and signal	PI	LC	Cable connection and signal	Termina	iting PLC
Signal name	direction	Signal	name	direction	Signal	l name
RDA		14	TXD+		14	TXD+
RDB		16	TXD-		16	TXD-
SDA		9	RXD+		9	RXD+
SDB		10	RXD-		10	RXD-
SG		7	0V		7	0V
	•	19	RTS+	•	19	RTS+
	•	11	CTS+		11	CTS+
	•	18	RTS-	•	18	RTS-
		23	CTS-		23	CTS-



5.7 Cable table 7 (D3-330 - Port on CPU Unit)

■ 1:1 connection

■ RS-422

TC	OP				Р	LC
Pin	Signal	Pin	Cable connection	Pin	Signal	Pin
arrangement*Note 1)	name	number		number	name	arrangement*Note 1)
1 5	RDA	1		14	OUT+	1 13
$\left(\circ \circ \right)$		2		15	OUT-	$\left(\begin{array}{c} \\ \end{array} \right)$
		3		17	IN+	14 25
Based on	RDB	4		16	IN-	Based on
communication		5		7	0V	communication
cable connector	SDA	6		10	RTS+	cable connector
front		7	↓	12	CTS+	front,
D-SUB 9 Pin male		8	•	11	RTS-	D-SUB 25 Pin male
(male, convex)	SDB	9	└───── └ ─	13	CTS-	(male, convex)

*Note 1) The pin arrangement is as seen from the connecting side of the cable connection connector.

RS-422 1 : N connection - Refer to 1:1 connection to connect in the following method.

TOP	Cable connection and signal	P	LC	Cable connection and signal	Termina	ting PLC
Signal name	direction	Signal	name	direction	Signal	name
RDA		14	OUT+		22	OUT+
RDB		15	OUT-		23	OUT-
SDA		17	IN+		24	IN+
SDB		16	IN-		25	IN-
SG		7	0V		7	0V
	• •	10	RTS+	•	10	RTS+
	•	12	CTS+		11	CTS+
	•	11	RTS-	•	12	RTS-
	•	13	CTS-	↓ ↓	13	CTS-
		22	OUT+		14	OUT+
		23	OUT-		15	OUT-
		24	IN+		17	IN+
		25	IN-		16	IN-



6. Supported addresses

The devices available in TOP are as follows:

The device range (address) may differ depending on the CPU module series/type. The TOP series supports the maximum address range used by the external device series. Please refer to each CPU module user manual and be take caution to not deviate from the address range supported by the device you want to use.

(1) DL-205

Device	Bit Address	Word Address	Remarks
Input Relay	X0000 ~ X0477	V40400 ~ V40423	
Output Relay	Y0000 ~ Y0477	V40500 ~ V40523	
Control Relay	C0000 ~ C0377	V40600 ~ V40617	
Special Relay	SP000 ~ SP137	V41200 ~ V41205	
	SP320 ~ SP617	V41215 ~ V41230	
Timer (Contact)	T000 ~ T177	V41100 ~ V41107	
Counter (Contact)	CT000 ~ CT177	V41140 ~ V41147	
Stage	S000 ~ S777	V41000 ~ V41037	
Timer (Elapsed Value)		V0000 ~ V0177	
Counter (Elapsed Value)		V1000 ~ V1177	
Data Register	V2000.0 ~ V3777.15	V2000 ~ V3777	
Special Register	V7746.0 ~ V7777.15	V7746 ~ V7777	

(2) DL-305

Device	Bit Address	Word Address	Remarks
I/O Relay	000 - 157	V000 –V014	
	700 - 767	V070 – V076(first half 1 byte)	
Control Relay	160 - 377	V016 – V036	
	770 - 777	V076 (latter half 1 byte)	
Shift Register	400 - 577	V040 - V056	
Timer/Counter(contact)	600 - 677	V060 - V066	
Timer/Counter		V600 - V677	
(elapsed time)			
Data Register		V400 - V576	

(3) DL-405

Device	Bit Address	Word Address	Remarks
Input relay	X0000 ~ X0477	V40400 ~ V40423	
Output relay	Y0000 ~ Y0477	V40500 ~ V40523	
Link relay	GX0000 ~ GX1777	V40000 ~ V40077	
Link output relay	GY0000 ~ GY3777	V40200 ~ V40377	
Control relay	C0000 ~ C0377	V40600 ~ V40617	
Special relay	SP000 ~ SP137	V41200 ~ V41205	
	SP320 – SP717	V41215 ~ V41234	
Timer(contact)	T000 ~ T377	V41100 ~ V41107	
Counter(contact)	CT000 ~ CT177	V41140 ~ V41147	
Stage	S0000 ~ S1777	V41000 ~ V41077	
Timer(Elapsed value)		V0000 ~ V0377	
Counter(Elapsed value)		V1000 ~ V1177	
Data register 1	V400.0 ~ V777.15	V400 ~ V777	
Data register 2	V1400.0 ~ V7377.15	V1400 ~ V7377	
Special register	V7400.0 ~ V7777.15	V7400 ~ V7777	
Data register 3	V10000.0 ~ V37777.15	V10000 ~ V37777	

External device connection manual for TOP Design Studio